

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appellant: Maw Maw Naing

Group Art Unit: 2611

Application No.: 10/560,714

Examiner: Shah, Tanmay K.

Filed: December 15, 2005

Confirmation No.: 8568

For: RECEIVER FOR RECEIVING RADIO FREQUENCY  
SIGNALS

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Commissioner for Patents  
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APPEAL BRIEF UNDER 37 C.F.R. § 41.37(a)

This is an appeal to the Board of Patent Appeals and Interferences from the decision of the Examiner dated April 2, 2009, which finally rejected claims 1-7 in the above-identified application. The Office date of receipt of Appellant's Notice of Appeal was July 31, 2009. This Appeal Brief is hereby submitted pursuant to 37 C.F.R. § 41.37(a).

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### **I. REAL PARTY IN INTEREST**

The real party in interest is the assignee of the full interest in the invention, NXP B.V., of Eindhoven, Netherlands.

### **II. RELATED APPEALS AND INTERFERENCES**

To the best of Appellant's knowledge, there are no appeals or interferences related to the present appeal that will directly affect, be directly affected by, or have a bearing on the Board's decision in the instant appeal.

### **III. STATUS OF CLAIMS**

Claims 1-7 are pending.

Claim 8 is canceled.

No claims are withdrawn.

No claims are objected to.

Claims 1-7 stand rejected as follows:

Claims 1, 2, 5, and 7 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Konishi et al. (U.S. Pat. Pub. No. 2001/0055956, hereinafter Konishi) in further view of Fujishima et al. (U.S. Pat. No. 7,187,733, hereinafter Fujishima).

Claims 3 and 4 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Konishi in further view of Fujishima in further view of Kwun (U.S. Pat. Pub. No. 2003/0022642, hereinafter Kwun).

Claims 1-7 are the subject of this appeal. A copy of claims 1-7 is set forth in the Claims Appendix.

### **IV. STATUS OF AMENDMENTS**

There were no proposed amendments submitted subsequent to the Final Office Action mailed April 2, 2009.

## **V. SUMMARY OF CLAIMED SUBJECT MATTER**

This section of this Appeal Brief is set forth to comply with the requirements of 37 C.F.R. § 41.37(c)(1)(v) and is not intended to limit the scope of the claims in any way. Examples of implementations of the limitations of independent claims 1, 5, 6, and 7 are described below.

The language of claim 1 relates to a receiver for receiving radio frequency (RF) signals. One example of a receiver is shown in Fig. 1. The illustrated receiver has a first stage and a second stage. Present application, Figs. 1-3, first stage 3 (shown in Figs. 1 and 2), second stage 5 (shown in Figs. 1 and 3). The first stage is a RF stage, and the second stage is an intermediate frequency (IF) stage. Present application, page 3, lines 27-32. As recited in the claim, the first stage is for amplifying and tuning RF signals and for generating IF signals. Present application, page 4, lines 1-9. The first stage includes a first gain controller for controlling a gain of the first stage. Present application, page 4, lines 9-14; Fig. 2, first gain controller 38. The second stage is for amplifying and demodulating the IF signals. Present application, page 4, lines 15-21. The second stage includes a second gain controller for controlling a gain of the second stage. Present application, page 4, lines 21-29; Fig. 3, second gain controller 54. The first and second gain controllers control the gains independently from each other. Present application, page 3, lines 7-16; page 6, lines 3-5. The first gain controller controls the gain of the first stage based on a modulated IF signal. Present application, page 4, line 30, through page 5, line 14 (In Figs. 2 and 3, the output 9 from the first IF amplifier 50 in the second stage 5 is fed back as the input 8 of the first gain controller 38 in the first stage 3, which controls the RF amplifier 31). The second gain controller controls the gain of the second stage based on a demodulated IF signal. Present application, page 5, line 15, through page 6, line 2 (In Fig. 3, the output of the RF demodulator 52 is fed back within the second stage 5 as the input of the second gain controller 54, which controls the second IF amplifier 51).

The language of claim 5 relates to a tuner for use in a receiver for receiving RF signals. The receiver includes a first stage for amplifying and tuning RF signals and for generating IF signals. Present application, page 3, lines 27-32; page 4, lines 1-9; Figs. 1 and 2, first stage 3. The receiver also includes a first gain controller for controlling a gain

of the first stage. Present application, page 4, lines 9-14; Fig. 2, first gain controller 38. The receiver also includes a second stage for amplifying and demodulating the IF signals. Present application, page 3, lines 27-32; page 4, lines 15-21; Figs. 1 and 3, second stage 5. The receiver also includes a second gain controller for controlling a gain of the second stage. Present application, page 4, lines 21-29; Fig. 3, second gain controller 54. The first and second gain controllers control the gains independently from each other. Present application, page 3, lines 7-16; page 6, lines 3-5. The first gain controller controls the gain of the first stage based on a modulated IF signal. Present application, page 4, line 30, through page 5, line 14. The second gain controller controls the gain of the second stage based on a demodulated IF signal. Present application, page 5, line 15, through page 6, line 2. The tuner includes the first stage and the first gain controller.

The language of claim 6 relates to a demodulator for use in a receiver for receiving RF signals. The receiver includes a first stage for amplifying and tuning RF signals and for generating IF signals. Present application, page 3, lines 27-32; page 4, lines 1-9; Figs. 1 and 2, first stage 3. The receiver also includes a first gain controller for controlling a gain of the first stage. Present application, page 4, lines 9-14; Fig. 2, first gain controller 38. The receiver also includes a second stage for amplifying and demodulating the IF signals. Present application, page 3, lines 27-32; page 4, lines 15-21; Figs. 1 and 3, second stage 5. The receiver also includes a second gain controller for controlling a gain of the second stage. Present application, page 4, lines 21-29; Fig. 3, second gain controller 54. The first and second gain controllers control the gains independently from each other. Present application, page 3, lines 7-16; page 6, lines 3-5. The first gain controller controls the gain of the first stage based on a modulated IF signal. Present application, page 4, line 30, through page 5, line 14. The second gain controller controls the gain of the second stage based on a demodulated IF signal. Present application, page 5, line 15, through page 6, line 2. The demodulator includes the second stage and the second gain controller.

The language of claim 7 relates to a method for receiving RF signals. The method includes amplifying and tuning RF signals and generating IF signals. Present application, page 3, lines 27-32; page 4, lines 1-9; Figs. 1 and 2, first stage 3. The method also includes controlling a gain of the amplified and tuned IF signals. Present application,

page 4, lines 9-14; Fig. 2, first gain controller 38. The method also includes amplifying and demodulating IF signals. Present application, page 3, lines 27-32; page 4, lines 15-21; Figs. 1 and 3, second stage 5. The method also includes controlling a gain of the amplified and demodulated IF signals. Present application, page 4, lines 21-29; Fig. 3, second gain controller 54. The method also includes controlling the gains independently from each other. Present application, page 3, lines 7-16; page 6, lines 3-5. One of the control inputs for the gain controllers is taken from a modulated IF signal. Present application, page 4, line 30, through page 5, line 14. One of the control inputs for the gain controllers is taken from a demodulated IF signal. Present application, page 5, line 15, through page 6, line 2.

## **VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

- A. Whether claims 1, 2, and 5-7 are patentable over the combination of Konishi and Fujishima under 35 U.S.C. 103(a).
- B. Whether claims 3 and 4 are patentable over the combination of Konishi, Fujishima, and Kwun under 35 U.S.C. 103(a).

## **VII. ARGUMENT**

For the purposes of this appeal, claims 1, 2, and 5-7 are argued together as a group for purposes of the question of patentability over the combination of Konishi and Fujishima under 35 U.S.C. 103(a). Claims 3 and 4 are argued together as a separate group for purposes of the question of patentability over the combination of Konishi, Fujishima, and Kwun under 35 U.S.C. 103(a).

- A. Claims 1, 2, 5, and 7 are patentable over the combination of Konishi and Fujishima because the combination of cited references does not teach all of the limitations of the claims.

Appellant respectfully asserts that claim 1 is patentable over the combination of Konishi and Fujishima because the combination of cited references does not teach all of the limitations of the claim. Claim 1 recites:

A receiver (1) for receiving radio frequency signals and comprising  
a first stage (3) for amplifying and tuning radio frequency signals  
and for generating intermediate frequency signals;  
a first gain controller (38) for controlling a gain of the first stage  
(3);  
a second stage (5) for amplifying and demodulating the  
intermediate frequency signals;  
a second gain controller (54) for controlling a gain of the second  
stage (5); which first and second gain controllers (38,54) control the gains  
independently from each other with the first gain controller to control the  
gain of the first stage based on a modulated intermediate frequency signal,  
and the second gain controller to control the gain of the second stage  
based on a demodulated intermediate frequency signal.  
(Emphasis added.)

In contrast, the combination of Konishi and Fujishima does not teach all of the  
limitations of the claim because the combination of Konishi and Fujishima does not teach  
a second gain controller to control the gain of a second stage based on a demodulated  
intermediate frequency signal, as recited in the claim. It should be noted that the Office  
Action acknowledges that Konishi does not teach the indicated limitation. Specifically,  
the Examiner states:

Regarding claim 1, Konishi teaches...a second gain controller (54) for  
controlling a gain of the second stage (5) (i.e. IF automatic gain control  
signal SAGI for controlling the IF automatic gain controller, page 1,  
paragraph 9); which first and second gain controllers (38,54) control the  
gains independently from each other (i.e. An automatic gain control signal  
generator SGa, SGb separately controls, based [on] the level signal SLa,  
SLb, the RF automatic gain controller 2 and the IF automatic gain  
controller 5, abstract). However [Konishi] does not specifically disclose  
with the first gain controller to control the gain of [the] first stage based on  
a modulated intermediate frequency and the second gain controller to  
control the gain of [the] second stage based on [a] demodulated  
intermediate frequency signal.  
Office Action, 4/2/09, pages 2-3 (original emphasis removed, underlining  
added).

Because Konishi does not teach controlling the gain of a second stage based on a  
demodulated IF signal, the Examiner relies on Fujishima as purportedly teaching the  
indicated limitation. Specifically, the Examiner states:

Fujishima teaches the first gain controller to control the gain of [the] first stage based on a modulated intermediate frequency and the second gain controller to control the gain of [the] second stage based on [a] demodulated intermediate frequency signal (In the high-frequency signal receiver of embodiment 2, the mixer 208 outputs a first intermediate frequency which is higher than the frequency of the input signal, and the mixer 214 outputs a second intermediate frequency which is lower than the frequency of the input signal. When the level of the high-frequency signal received at the input port 201 is larger than, e.g. -70 dBm, the gain of the AGC circuit 202 is controlled. When the level is not larger than -70 dBm, the gain of the AGC circuit 211 is controlled, and the gain of the AGC circuit 216 is controlled, col 10, line 37 – 45). Office Action, 4/2/09, pages 3-4 (original emphasis removed, underlining added).

It should be noted that the Examiner's language presented in the Office Action (the text within the parentheses above) is merely a direct quotation from the description of embodiment 2 of Fujishima. See, Fujishima, col. 10, lines 27-36. The Examiner repeats this same description in the Advisory Action mailed June 25, 2009. Additionally, in the Advisory Action, the Examiner concludes "So, [the receiver of Fujishima] does con[t]rol the gain based on the demodulated intermediate frequency signal as claimed." Advisory Action, 6/25/09, page 2.

However, despite the assertions in the Office Action and the subsequent Advisory Action, Fujishima fails to teach a second gain controller to control the gain of a second stage based on a demodulated intermediate frequency signal, as recited in the claim. Fujishima is generally directed to a high-frequency signal receiver. Fujishima, abstract. Fujishima includes various illustrations of the receiver, and the Examiner specifically refers to the illustration shown in Fig. 2 (i.e., embodiment 2). Embodiment 2 is described in detail in the specification of Fujishima at col. 9, line 46, through col. 12, line 30. Also, Fujishima states that the noise equations 3-5 described in embodiment 1 (see col. 6) and the corresponding Figs. 3-5 are applicable to the receiver of embodiment 2. Fujishima, col. 9, lines 60-61.

The receiver shown in Fig. 2 of Fujishima includes several automatic gain control (AGC) controllers 209, 212, and 221. Generally, each AGC controller controls a corresponding AGC circuit 202, 211, and 216. The receiver shown in Fig. 2 also includes a demodulator 219, which is downstream of all of the AGC controllers and AGC



circuits. The demodulator 219 outputs an output signal at an output port 220. While the demodulator 219 apparently generates a demodulated signal, it should be noted that the demodulated signal is not used by any of the AGC controllers. More specifically, the AGC controllers 209, 212, and 221 do not receive the demodulated signal as an input.

Furthermore, the language copied by the Examiner into the Office Action and the Advisory Action does not teach using a demodulated signal as an input of an AGC controller or to control an AGC circuit. In fact, the referenced description merely explains how the mixers 208 and 214 output different IF signals relative to the input signal. The referenced description also explains when the gain of the various AGC circuits is controlled based on the level of the input signal. However, Fujishima does not teach any type of relationship between the level of the input signal received at the input port 201 of the circuit and the characteristics of the demodulated signal output from the output port 220 of the circuit. Hence, the description in Fujishima of controlling the AGC circuits based on the level of the input signal is insufficient to teach controlling the AGC controllers based on the demodulated signal output by the circuit.

Rather, all of the AGC controllers receive input signals from mixers or filters which are upstream of the demodulator 219. Since the signal sources for the AGC controllers are all upstream of the demodulator 219, none of the AGC controllers uses the demodulated signal as an input to control the AGC circuits. Moreover, if the AGC controllers and/or the AGC circuits were to use a demodulated signal, then there would appear to be no reason to include the demodulator 219 that is shown in Fig. 2 and described in the specification of Fujishima, because the signal output from the digital filter 218 would already be demodulated. Therefore, Fujishima does not teach any AGC controllers which control a gain based on a demodulated signal. Since, Fujishima does not teach an AGC controller which controls a gain based on a demodulated signal, Fujishima further fails to teach an AGC controller which controls a gain based on a demodulated intermediate frequency signal.

For the reasons presented above, the combination of Konishi and Fujishima does not teach all of the limitations of the claim because Konishi does not teach a second gain controller to control the gain of a second stage based on a demodulated intermediate frequency signal, as recited in the claim. Accordingly, Appellant respectfully asserts

claim 1 is patentable over the combination of Konishi and Fujishima because the combination of Konishi and Fujishima does not teach all of the limitations of the claim.

Appellant respectfully assert independent claims 5, 6, and 7 are patentable over the combination of Konishi and Fujishima at least for similar reasons to those stated above in regard to the rejection of independent claim 1. Each of these claims recites similar subject matter as claim 1. Although the language of these claims differs from the language of claim 1, and the scope of each claim should be interpreted independently of other claims, Appellant respectfully asserts that the remarks provided above in regard to the rejection of claim 1 also apply to the rejections of these claims.

Given that claims 2-4 depend from and incorporate all of the limitations of the corresponding independent claim 1, which is patentable over the combination of cited references, Appellant respectfully submits that dependent claims 2-4 are also patentable over the combination of cited references based on an allowable base claim. Additionally, each of claims 2-4 may be allowable for further reasons. Accordingly, Appellant requests that the rejections of claims 1-7 under 35 U.S.C. 103(a) be withdrawn.

B. Claims 3 and 4 are patentable over the combination of Konishi, Fujishima, and Kwun because the combination of cited references does not teach all of the limitations of the claims.

Given that claims 3 and 4 depend from and incorporate all of the limitations of the corresponding independent claim 1, which is patentable over the combination of Konishi and Fujishima, Appellant respectfully submits that dependent claims 3 and 4 are also patentable over the combination of cited references based on an allowable base claim. Additionally, each of claims 3 and 4 may be allowable for further reasons. Accordingly, Appellant requests that the rejections of claims 3 and 4 under 35 U.S.C. 103(a) be withdrawn.

### **VIII. CONCLUSION**

For the reasons stated above, claims 1-7 are patentable over the cited references. Thus, the rejections of claims 1-7 should be withdrawn. Appellant respectfully requests that the Board reverse the rejections of claims 1-7 under 35 U.S.C. 103(a) and, since there are no remaining grounds of rejection to be overcome, direct the Examiner to enter a Notice of Allowance for claims 1-7.

At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account **50-4019** pursuant to 37 C.F.R. 1.25. Additionally, please charge any fees to Deposit Account **50-4019** under 37 C.F.R. 1.16, 1.17, 1.19, 1.20 and 1.21.

Respectfully submitted,

/mark a. wilson/

Date: September 29, 2009

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## **IX. CLAIMS APPENDIX**

1. A receiver (1) for receiving radio frequency signals and comprising  
a first stage (3) for amplifying and tuning radio frequency signals and for generating intermediate frequency signals;  
a first gain controller (38) for controlling a gain of the first stage (3);  
a second stage (5) for amplifying and demodulating the intermediate frequency signals;  
a second gain controller (54) for controlling a gain of the second stage (5); which first and second gain controllers (38,54) control the gains independently from each other with the first gain controller to control the gain of the first stage based on a modulated intermediate frequency signal, and the second gain controller to control the gain of the second stage based on a demodulated intermediate frequency signal.
2. A receiver (1) according to claim 1, wherein both gain controllers (38,54) are adjusted at the same reference level for controlling the gains in relation to this reference level.
3. A receiver (I) according to claim 2, wherein the second stage (5) comprises a first intermediate frequency amplifier (50) and a second intermediate frequency amplifier (51), with the first gain controller (38) comprising a first gain detector (41) for detecting an output signal of the first intermediate frequency amplifier (50) and a first gain generator (40) for generating, in response to the detecting, a first gain control signal to be supplied to a control input (39) of a radio frequency amplifier (31) in the first stage (3).
4. A receiver (1) according to claim 3, wherein the second stage (5) comprises an intermediate frequency demodulator stage (52) having an input coupled to an output of the second intermediate frequency amplifier (51) and an output coupled to an input of a video amplifier (53) for generating a video signal, with the second gain controller (54) comprising a second gain detector (59) for detecting an output signal of the intermediate frequency demodulator stage (52) and a second gain generator (58) for generating, in

response to the detecting, a second gain control signal to be supplied to a control input (57) of the second intermediate frequency amplifier (51).

5. A tuner for use in a receiver (1) for receiving radio frequency signals, which receiver (1) comprises

- a first stage (3) for amplifying and tuning radio frequency signals and for generating intermediate frequency signals;
- a first gain controller (38) for controlling a gain of the first stage (3);
- a second stage (5) for amplifying and demodulating the intermediate frequency signals;
- a second gain controller (54) for controlling a gain of the second stage (5); which first and second gain controllers (38,54) control the gains independently from each other with the first gain controller to control the gain of the first stage based on a modulated intermediate frequency signal, and the second gain controller to control the gain of the second stage based on a demodulated intermediate frequency signal, and which tuner comprises the first stage (3) and the first gain controller (38).

6. A demodulator for use in a receiver (1) for receiving radio frequency signals, which receiver (1) comprises

- a first stage (3) for amplifying and tuning radio frequency signals and for generating intermediate frequency signals;
- a first gain controller (38) for controlling a: gain of the first stage (3);
- a second stage (5) for amplifying and demodulating the intermediate frequency signals; and
- a second gain controller (54) for controlling a gain of the second stage (5); which first and second gain controllers (38,54) control the gains independently from each other with the first gain controller to control the gain of the first stage based on a modulated intermediate frequency signal, and the second gain controller to control the gain of the second stage based on a demodulated intermediate frequency signal, and which demodulator comprises the second stage (5) and the second gain controller (54).

7. A method for receiving radio frequency signals and comprising  
a first step of amplifying and tuning radio frequency signals and of generating intermediate frequency signals;  
a second step of controlling a gain of the first step;  
a third step of amplifying and demodulating intermediate frequency signals; and  
a fourth step of controlling a gain of the third step; which second and fourth steps control the gains independently from each other, wherein one of the control inputs for the gain controllers is taken from a modulated IF signal, and one of the control inputs for the gain controllers is taken from a demodulated IF signal.

8. (canceled)

## **X. EVIDENCE APPENDIX**

There is no evidence submitted with this Appeal Brief.

## **XI. RELATED PROCEEDINGS APPENDIX**

To the best of Appellant's knowledge, there are no appeals or interferences related to the present appeal that will directly affect, be directly affected by, or have a bearing on the Board's decision in the instant appeal.